Observations and Local Knowedge of Urial (*Ovis orientalis*) on the Bamiyan Plateau, Central Afghanistan

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Introduction

Very little is known about the distribution, abundance and behaviour of urial (*Ovis orientalis*) in Afghanistan. During consultation on the management plan for Afghanistan's first protected area, Band-e-Amir National Park in Bamiyan Province (Figure 1), local people informed us that urial are still common in the sparsely populated, high-altitude plateau to the north. With funding from the United States Agency for International Development (USAID) to the Wildlife Conservation Society's, we undertook ground-based urial surveys of the Bamiyan Plateau and interviewed local people about urial numbers, distribution and behavior. This paper presents our initial, incomplete findings in the hopes that they will form the basis for further investigations and practical conservation efforts.

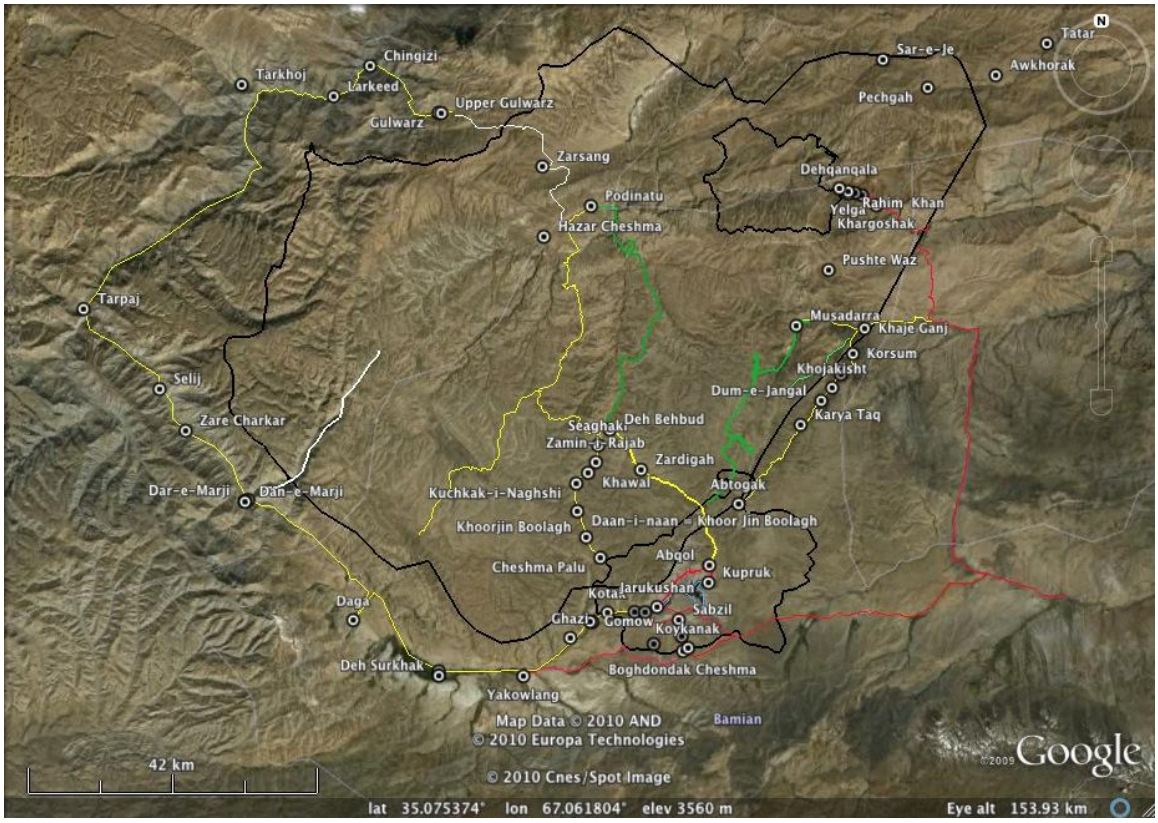

Figure 1. This is the kind of information that would be on a line map (some names should be corrected at west of the map: Selij to ***Solej,*** *Zare Charkar should be removed because I am not sure what it is but I am sure it* ***is not this****, Dan-e-Marji to* ***Dan-e-Murghi,*** *Deh Surkhak to* ***Deh Surkh.*** *T the east of map: Musadarra to* ***Musa Dara,*** *Khaje Ganj to* ***Khoj-e-Ganj,*** *Khojakisht to* ***Khoj-e-Kisht,*** *Karya Taq o* ***Qharaitaqh.*** *At the south and center: Yakowlang to* ***Yakawlang,*** *Boghdondak Cheshma o* ***Boghondak Cheshma,*** *Koykanak to* ***Koykinak,*** *Gomow to* ***Gomaw,***

*Kupruk to **Kopruk,** Daan-i-Naan, Better to **remove it** and Seaghaki to **Syakhagi**). Maybe most of these are my careless spells but better to correct them in a better way. Geographical context in Afghanistan would be shown. Lat/Long hashs along sides. Band-e-Amir and Ajar labeled. Different line types for survey routes, primary and secondary roads, boundaries with legend. Provincial boundaries would be shown.*

Literature Review

Urial Taxonomy

The taxonomy and nomenclature of urial is unsettled and there is little consistency between authorities. Here we follow the IUCN/SSC Caprinae Specialist Group (Shackleton 1997) in calling urial *Ovis orientalis*. Shackleton (1997) recognizes 12 subspecies of *O. orientalis*. Most sources (e.g., Shackleton 1997, p. 13; IUCN Red List, www.iucnredlist.org/apps/redlist/details/15739/0) suggest only the Afghan urial, *O. o. cycloceros,* occurs in the country. However, Habibi (2003) cites 4 subspecies as occurring in Afghanistan and the review of literature by Michel (nd) suggest that urial in the Wakhan may be *O. o. vignei*. There can be little doubt, however, that the urial of Bamiyan Province are *O. o. cycloceros*.

Distribution of Urial in Afghanistan

Urial are, or at least once were, the most widespread ungulate in Afghanistan (Habibi 2003). Hassinger (1973) summarized Afghan records between 1840 and 1968. Habibi (1985, 1997, 2003) summarized information from the 1970s. The distribution map of Hassinger (1963) show a very wide distribution across most of Afghanistan excluding only the desert regions in the southwest and along the Amu Darya. Habibi (1997) presents a map reflecting the "known" then-current distribution as only occurring in northern Bamiyan Province and in the Zebak Range of SE Badakshan Province (ca. N35.47° E71.50°). However, he shows a larger "general" distribution throughout the central Hindu Kush and in the Kohe Safi region just E of Kabul. This 1970s-era range is much reduced from the historical range indicated by Hassinger.

In Bamiyan Province, Shank et. al. (1977) cited reports by local people of urial migrating from the Ajar Valley to Band-e-Amir (Figure 1), however this was unconfirmed by any sightings. Shank and Larsson (1977) reported Band-e-Amir residents as saying that urial seasonally occupy the Kohe Burocinal (probably Koh-e-Burghusunak, N34.88° E67.19°) and Kohe Argusa (probably Koh-e-Arghosha, (N35.04° E67.21°) areas near Band-e-Amir, but the reports were also unconfirmed.

Recently, Habib (2008) found evidence (sightings, horns, local reports) of urial on the north side of the Wakhan Valley as far east as Sargez village (N36.98° E72.86°). Stefan Michel (pers. com. 2008) saw and photographed a single urial that had apparently been living for several years with a herd of cattle near Ishkahshim in Badakhshan Province (ca. N36.62° E71.29°). These sightings, and those reported below, are the only reliable evidence for the current distribution of urial in Afghanistan.

Study Area

The Bamiyan Plateau is an area of approximately 6000km comprised of high-altitude (3000 – 4000m) rolling hills, valleys and steep canyons with boundaries lying east of the northwestern part of Yakawlang(Balkh-ab river) Valley, just south of the Samangan Provincial border, west of the Dar-e-Aw River (branch of Saighan valley) and north of the town of Yakowlang (Figure 1). We roughly delineated the boundaries of the Plateau at the 3500m contour level because this appears to approximately encompass the range of the local urial population. However, there are valleys and depressions within the Plateau area at lower elevation. Most of the Plateau is in Bamiyan Province with smaller areas in Sar-e-Pul and Samangan Provinces.

Band-e-Amir National Park, Afghanistan's first officially designated protected area, lies on the southern boundary of the Plateau. Band-e-Amir is remarkable for its series of crystal-clear, high altitude lakes created by striking travertine dams. On the northeast corner of the Plateau lies the Ajar Valley, long protected by the Afghan royal family as a hunting reserve. Protection lapsed during and following the war and the current ibex population is estimated to 100-200 and dwindling rapidly.

Temperature data loggers were deployed for 28 months at Jarukushan (i.e. Band-e-Amir, N34.83 E67.18, 2912m) and for 27 months at Dehqanqala (i.e., Ajar N35.37 E67.48, 1970m). At Band-e-Amir, the coldest monthly average was -12.2° with an absolute minimum temperature of -34.2°. The warmest monthly average was 18.7° with an absolute maximum of 32.2°. At Ajar, the coldest monthly average was -0.4° with an absolute minimum temperature of -10.4°. The warmest monthly average was 26.7° with an absolute maximum of 36.8°. On average, Ajar was 8.5° warmer than Band-e-Amir as a result of being nearly 1000m lower in elevation. Temperatures throughout most of the Plateau can be expected to be much lower than at Band-e-Amir because of the higher elevation.

No precipitation measurements have been made on the Plateau, but Freitag (1971) estimated that Band-e-Amir may get as much as 400mm annually at higher elevations. Most of this falls as snow with virtually no precipitation during the growing season.

Bedunah et al. (in prep.) used the normalized difference vegetation index (NDVI) to calculate dates of snow cover, initial green-up, and maximum green vegetation for the years 2000 to 2004 and 2008-2009 at Band-e-Amir and Ajar. Band-e-Amir is typically snow-covered from about November 17 – March 6 while the duration of snow cover at Ajar is 2 – 4 weeks less. At Band-e-Amir, green-up initiated about 22 March and reached its peak on June 26, on average. At Ajar, green-up started at a mean date of about 6 March and reached a peak around June 15. Green-up on most of the Plateau can be expected to be somewhat later than at Band-e-Amir and snow duration to be longer in duration because of the higher mean elevation.

The vegetation of the Plateau is primarily a shrub steppe dominated by many species of *Acantholimon* and *Artemisia* (Bedunah et al in press). Bedunah et al. (in press) roughly estimated annual above-ground production at 880-kg ha^{-1} and 800 kg ha^{-1} for Ajar and Band-e-Amir respectively. The Plateau has been grazed for centuries and all areas show the effects to a greater or lesser extent.

Official information on villages is incomplete and inaccurate. We recorded the names and locations of all villages visited. With the possible exception of some small villages in the southwestern and northeastern corners of the Plateau, we believe that all villages are accurately depicted in Figure 1. An altitude of about 3500m appears be the limit at which barley and wheat can be profitably grown and settlements are largely limited to lower elevations at the edge of the Plateau. Consequently, most of the Plateau is used only seasonally and lacks permanent settlement. Such a large expanse of land with so few permanent settlements is rare in central Afghanistan and presents a unique conservation opportunity.

Geographic coordinates are provided for all mentioned places because names are only roughly transliterated into roman orthography, are obscure and are not consistently applied even among local people.

Methods

In October 2008, we did a foot survey between the towns of Musadarra and Kakhdow on the eastern side of the Plateau (Figure 1). In June 2009 we surveyed on foot though the centre of the Plateau from Podinatu to Deh Behbud. Local guides accompanied us on the foot surveys and recommended the best routes, camping spots and locations to see urial. During 2009, we drove all the roads on and around the Plateau (Figure 1) and interviewed villagers in all areas.

Results

Urial Sightings and Horn Pickups

Between May 2008 and October 2009, we saw 55 urial throughout the Plateau area at elevations ranging from 3000 – 3750m (Figure 2, Table 1). Several urial horns were picked

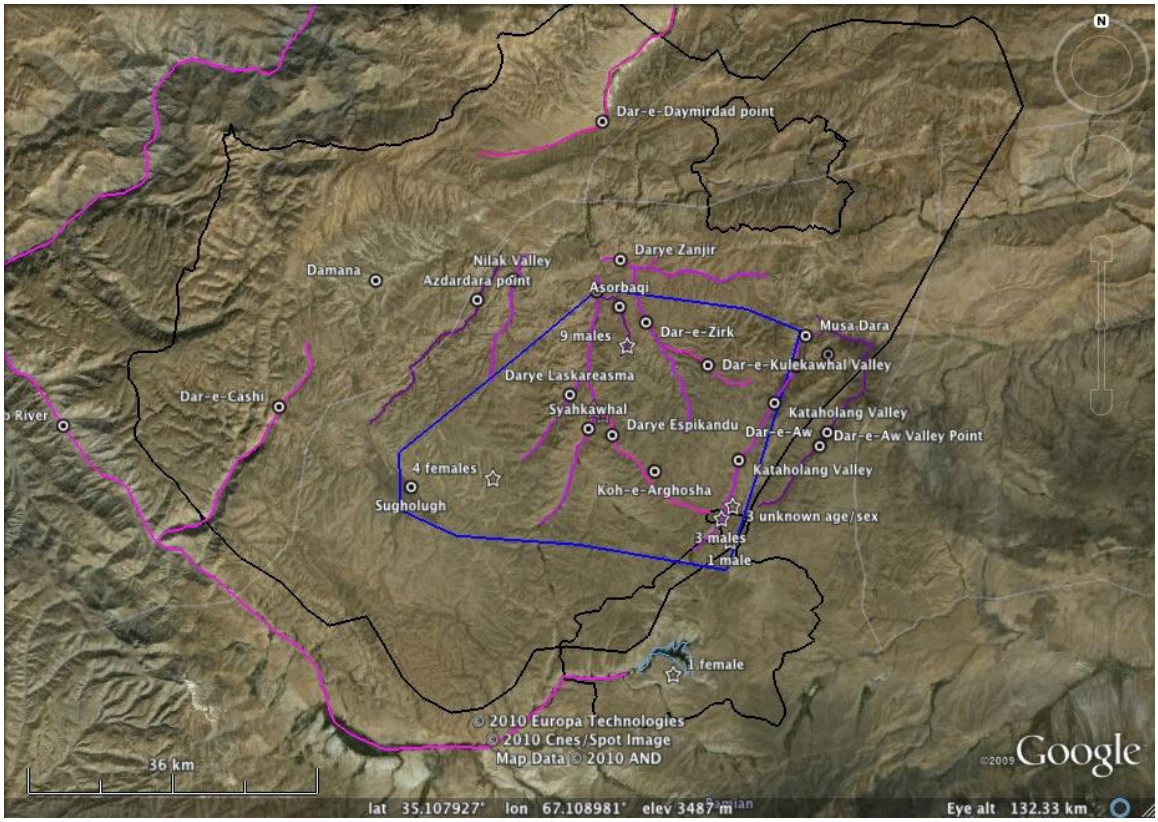

Figure 2. Line drawing will show major drainages, areas and animal sightings. Blue area is major summer/lambing concentration area (April – November).

up on the Plateau (Table 1). Urial horns are also commonly found on shrines, mosques and prayer houses in populated areas, but they are not recorded here because it is impossible to reliably determine their provenance.

Table 1. Locations of urial sightings and horn pickups.

Date	Location	Elevation	Animals
23 May, 2008	Band-e-Amir, N34.81° E67.23°	3200m	1 female
27 October, 2008	North of Abtugak N35.00° E67.313°	3748m	3 of undetermined age/sex
28 October, 2008	Kataholang Valley, N34.99° E67.30°	3357m	1 large male and 2 smaller males
24 June, 2009	Ashorbaqi Valley, N35.18° E67.17°	3181m	7 adult male, 2 juvenile male, 2 yearling or 2-yr olds
25 June, 2009	Syahkawhal Valley, N35.11° E67.13°	3012m	20, all females, lambs, and yearlings
25 June, 2009	Darye Espikandu, N35.10° E67.14°	3150m	8 females and 4 lambs
September 9, 2009	Abtogak N 34.97° E 67.31°	3440m	1 young male
26 October, 2009	E of Sogholugh, N35.03° E66.99°	3755m	4 females
6 June 2008	Pushte Je spring, N35.32° E67.31°	3305m	Horn

22 June 2009	E of Podinatu, 35.34° E67.091°	2813m	Horn
22 June 2009	Tabaqsar, N35.28° E67.14°	3200m	3 horns
24 June, 2009	Near Qodaqy Jafar well, N35.17° E67.16°	3214 m	Horn
26 October 2009	East of Soghulogh, N35.10° E67.00°	3500m	Horn
26 October, 2009	Soghulogh, N35.00° E66.90°	3400m	Horn

Local Knowledge

Local migrations

Our understanding of urial movement is fragmentary and completely dependent upon the local knowledge of residents, which is sometimes inconsistent and narrow in geographic scope. Regular seasonal movements along traditional routes are called *nodal* or *port-e-ahu*. One *nodal* is generally to the wintering/rutting grounds and the other is to the lambing/summering grounds.

People from the Saighan District (i.e., Musadara and vicinity) say that urial rut in the vicinity and then move north to Qolatu and Jawzeri in late winter and finally move on to lamb far to the northwest (Band-e-Pulak, Band-e-Tas, Sar-e-Chughurak and Targhaibulagh). They summer in the central part of the Plateau (Band-e-Pulak, Kule Khawhal, Cheshma Korak, and Dar-e-Zirk).

People from Ajar say that urial migrate between Ajar and further north to various areas in Samangan Province (Tatar, Pechgah, Sar-e-Asiab, Sar-e-Je, Awkhorak). Timing of these movements is unknown but expected to be north during winter.

People from northern Band-e-Amir state that urial arrive in late May to the centre of the Plateau (Pesh Band, Sar-e-Abtugak, Dar-e-Zirk, Syahkhawal, Takatu, Band-e-Chahar Aseman and Syahdasht). Sughulugh and Ghorakhor are famous for lambing. Some leave this area in mid-November into December to go to Qolatu and Ajar.

Podinatu people state that urial arrive in late May from Tatar and Koh-e-Kanthal and other northern areas and go to lamb and summer in the central part of the Plateau (Syahkawhal, Khuk Koshta, Dar-e-Zirk, Ghudugh-e-Jafar, Qolatu) and the western portion (Syah Dasht, Kata Puza, Begali and Ganda Joy.

People in southern Samangan consider urial to inhabit areas to the NE of the Plateau (Tatar, Pechgah, Sar-i-Asyab, Sar-e-Je and Awkhorak).

People from Cheshma Palu consider there to be two main concentrations of urial. The first is to the west on the other side of the Balkh-ab River (northwestern part of Yakawlang valley) while the second is in the central part of the Plateau to the northeast. In hard winters, the animals move to Qolatu in early December and return to the central Plateau in early April.

People from Balkh-ab state the both urial and ibex are more numerous to the west of the Balkh-ab (northwestern part of Yakawlang valley) because there are fewer road and less disturbance.

Although there are information gaps and some discrepancies, the general picture of urial seasonal movements on the Plateau is clear. In April or May, urial move into the core lambing and summer range in the central part of the Plateau with the key areas being Sugholugh (N35.00° E66.90°), Syahkawhal (a long drainage from N35.09° E67.12° to N35.24° E67.13°), and the Dare-e-Zirk/Kul-e-kawhal area (N35.20° E67.20° to N35.16° E67.28°). Syahkhawal and the area eastward has no surface water, so local people do not graze their livestock in this area until the snow is on the ground in November. The absence of spring and summer grazing by domestic livestock has created excellent range conditions and only seasonal disturbance by humans. Damana (ca. N35.25 E66.84) was reputedly once an important urial area, but now there are very few animals in the whole area between Balkh-ab and Damana because of so much grazing and disturbance from Balkh-ab people. Many groups of people graze livestock in the area (Figure 3).

Long-distance Migrations

The general opinion of local people is that most urial live year round on the Plateau, but some undertake long migrations to and from the Plateau. People from the Saighan District (Musadara and vicinity) think that a sub-populatons of urial migrate from this area in the winter to the east to Aghrabat area (Akshi, Gonbad, Khakistar Eil), north to Tatar Pechgah (N35.50 E67.62), Sar-e-Asiab , Awkhorak (all the southern Samangan, northward from Ajar and Jawzari) , southern Dar-e-Suf District and northwest of plateau to Sar-e-Pul Province.

A retired hunter from Surkhdar (N34.49 E67.48) just west of the city of Bamiyan stated that in the old days, urial would move through the area in mid-November going north from the Koh-e-Baba Range along well-known traditional routes and would return in mid-May. He did not indicate where they wintered. People from northern Band-e-Amir stated that 20 years ago there was a regular migration from Sugholugh (N35.01 E66.53) and Gora Kahr (N34.57 E66.57) to the Koh-e-Baba. Both sources indicated that this migration has largely been extinguished due to overhunting.

Behaviour

The rut is called *shor* or *shor-e-ahu* and is said to take place from mid-December to mid-January and. This is later than reported in the literature. Habibi (2003) states that urial rut in Afghanistan from mid-October into November. Baskin and Dannel (2003) report that urial rut from mid-November to mid-December in Tajikistan and Turkmenistan with those in Uzbekistan having a much longer rut lasting from mid-October to the end of December. In Pakistan, urial rut from mid-October to the end of November (Schaller 1971). There was a consensus amongst local people that urial lambing (called *tol* or *tol-e-ahu*) takes place in late May to early June. One can therefore calculate the date of the rut from the length of urial gestation. Unfortunately, this information is uncertain varying from 150d for Punjab urial in Pakistan (Schaller 1977 Table 14) to 165 days in Iran (Firouz 2005). The hunter from Surkhdar mentoned above indicated a gestation period of 135 days, which is certainly too short. Given a mean lambing date of June 1 and a range of gestation from 150 – 165d, then the rut should commence in mid-December to early January thereby confirming the information provided by locals.

Urial sometimes become accustomed to grazing dryland barley fields and are termed *ahu-e-jawkhor* (i.e., “barley-eating wild ungulates”). These animals are persistent and cannot be

frightened off even if group members are shot. The young male observed at Abtogak in September 2009 (Table 1) was one of 9 urial that regularly feed in the community's barley fields. Finding a means to protect high altitude subsistence farming from urial depredation will be a key element in any urial conservation strategy.

Informants at Cheshma Palu say that during spring and summer, urial are able to get enough moisture from the vegetation and can therefore occupy areas with no accessible, free water. However, in the fall, when the vegetation dries and before the snow falls (late October –early November), urial come to springs in a behavior termed *Aw khora* (Aw or Ab means water) where they are very susceptible to hunters. In contrast to this information, Baskin and Dannel (2003) cite Russian sources as stating that urial require water during spring and summer.

Land Use

There are no crops grown outside the immediate vicinity of Plateau villages. However, the entire area is grazed by flocks comprised primarily of goats and sheep with fewer cattle and donkeys. Most of the grazing is done in the snow-free period of May through October. In summer, graziers often bring their entire families to traditional summer camps called *ailaqs* situated near wells or streams. In winter, most flocks are brought down from the Plateau to lower elevations near villages and fed on stored fodder and local pastures. Some communities like Pudinatu, Hazarchishma, Zardigah and Deh Behbud do not feed their livestock on stored fodder, even in winter except for those who are sick or weak. The reason for this is that they have warmer pastures with thinner snow in winter. Summer pastures are allocated to villages or groups of villages according to tradition with no firm boundaries or exclusive ownership rights. Figure 3 represents our best understanding of the primary grazing areas used by Plateau villages. Future conservation planning will require engaging the traditional users of each area considered important for urial. Beginning in the late 19th

century, Pashtun nomads (*kuchis*) enjoyed seasonal grazing rights

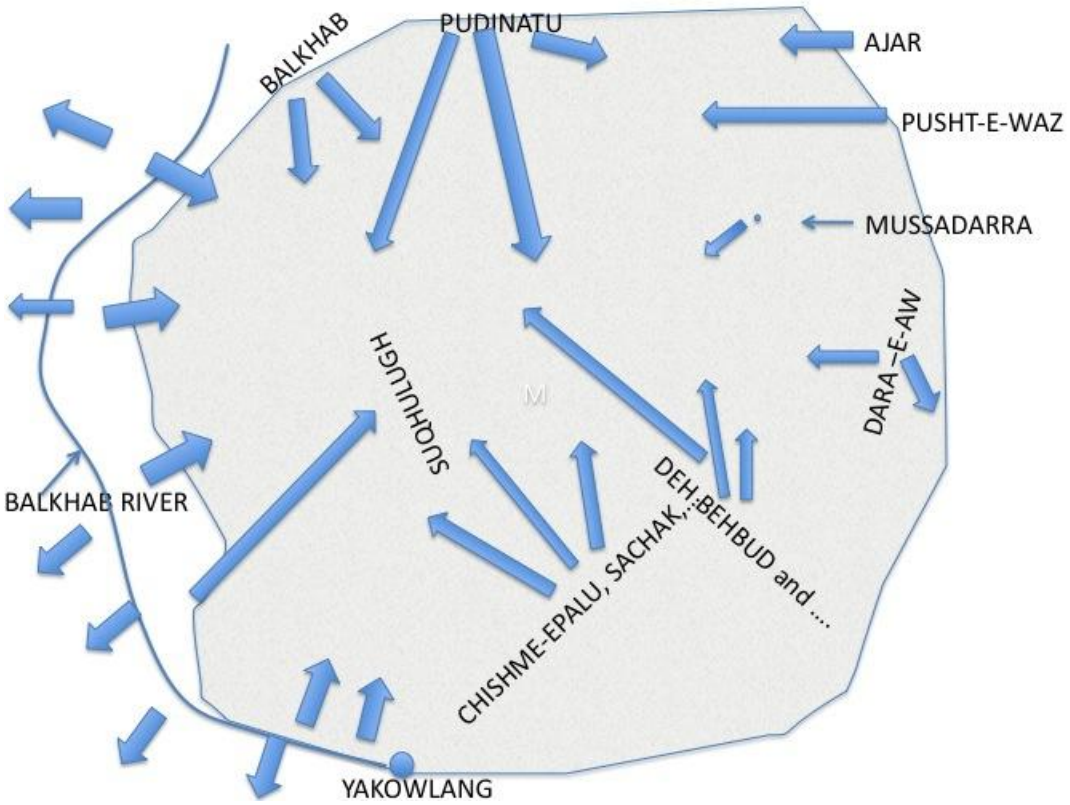

Figure 3. This is the type of figure that would be put in here. Comprised of movement arrows, key villages, and key area names.

on and around the Plateau granted by a succession of Afghan kings. However, *kuchis* have been almost entirely excluded from the area since the end of the war.

Population Size and Trend

We are able to make no estimate of urial population size on the Plateau, except to say that there must be at least hundreds. Local people indicate that urial populations were larger before the war when people had few and mostly primitive firearms. During and immediately following with war, high-powered weapons were ubiquitous and many urial were killed opportunistically. On 20 March 2005, Afghan President Hamid Karzai issued Presidential Decree No. 53 banning hunting in any form, but the ban is almost universally ignored. However, since the passage in 2005 and increasingly effective enforcement of the Law on Firearms, Ammunitions and Explosives, people have become wary of openly carrying firearms. Accordingly, urial populations are considered to have increased in the past several years. However, hunting continues mostly by a few individuals who attain local prestige as hunters and by powerful government officials. Villagers in southern Samangan are aware of the ban on hunting, so instead specialize in trapping. One man from Rashak village has recently trapped one urial and 8 ibex including a young kid from the nearby rocky cliff mountains of Koh-e-Kanthal.

One informant attributed decline in urial to sonic booms by Russian aircraft during the war. Others site increased disturbance from growing human populations as a problem. Urial populations on the Plateau would best be assessed by use of a fixed-wing aircraft.

Ibex

The Bamiyan Plateau is characterized by rolling hills ideally suited to urial. Ibex (*Capra siberica*) require steeper, rockier terrain which occurs on the Plateau in areas too small to support a viable ibex population. The exceptions are the Ajar Valley, and, according to local people, the Azdardara Valley (N35.23 E66.97) and Koh-e-Kanthal (N35.36 E67.12) which are all precipitous, rocky gorges with numerous steep side valleys. The Ajar Valley was once a royal hunting reserve perhaps containing as many as 5000 ibex in the 1970s (Shank et al. 1977). Recent surveys suggest only 100-200 ibex remain in the Ajar Valley. The other two areas have not yet been surveyed.

Summary and Conclusions

Not written yet.

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EXTRA STUFF

In his 1997 and 2003 papers, Habibi also presents evidence for urial in the following areas in the 1970s:

- Kohe Safi region 30km NE of Kabul (ca. N34.73° E69.41°).
- Feroz Koh Mountains in Herat and Badhgis provinces (ca. N34.50° E63.50°) eastward along the Safed Koh Range (a different Safed Koh than the one in eastern Afghanistan) towards Band-e-Bayan in Ghor Province (ca. N34.35°, E65.25°).
- Near Lataband Pass 35 km E of Kabul (ca. N34.53, E69.55). Urial from this area are known only from specimens collected from hunters.
- In the southerly parts of Kandahar and Ghazni Provinces, although these reports were unconfirmed.
- Migrations reported by hunters between headwaters of the Helmand River west of Kabul (ca. 34°34'N 68°33'E) to winter ranges in Uruzgan Province.